

REMARKS

This Amendment is responsive to the Final Office Action mailed on March 20, 2003. This Amendment After Final is being submitted pursuant to 37 CFR 1.116 in that ~~it merely presents the rejected claims~~ in better form for consideration on appeal, if necessary. Applicants respectfully request, therefore, that the Examiner enter the herein noted amendments and allow the claims, or, in the alternative, enter the herein amendment for purposes of appeal.

✓ As to the title of the invention, Applicants have amended the title to correct the spelling error noted by the Examiner.

As to Claim 1, Applicants acknowledge the Office Action's request at paragraph 4 that Claim 1, line 8 (sic, line 10) amended to read, "having a modified surface on which the modified surface is exposed". Applicants respectfully submit, however, that just adding the antecedent identifier "the" does not read correctly. Applicant have elected, therefore, to correct the antecedent problem by deleting the second reference to "modified surface" as follows:

"having a modified surface on which modified surface is exposed . . ."

In addition, Applicants have amended Claim 1 herein pursuant to 37 CFR 1.116 to clarify that the "bond pad" at issue is "an integrated circuit I/O pad". Applicants respectfully submits that this limitation is already in the claims at issue because the "bond pad" of Claim 1 is the bond pad on the active surface of the integrated surface (i.e. the integrated circuit I/O pads 212 as shown in Fig. 1).

only Claim 1 is the only independent claim presently at issue, the Office Action rejects Claim 1 under 35 U.S.C. 103(a) as obvious over Conru et al in view of Dlugokecki.

Applicants respectfully submit that Claim 1 is allowable over the cited combination and respectfully request reconsideration of the rejection.

First, the primary reference cited is Conru et al. and Conru et al. does not in any way teach or suggest the step of providing a plastic encapsulated microcircuit or PEM.

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Conru et al., in fact, is directed to creating a semiconductor package by first starting with a conventional bare die or, as Conru et al. refers to it, semiconductor chip "12" (see Fig.

1). As further shown in Fig. 1, an insulating layer 11 is secured above the semiconductor chip 12 and then a lead frame 10 is secured above the insulating layer 11.

As further shown in Fig. 2, an upper layer formed from a polyimide film 18 and a thermostat adhesive layer 17 is pressed downward onto the die, lead frame conductors 14, and wires 16 connecting the chips terminals 15 to the lead frame conductors 14:

"Once the film 18 is properly positioned over the chip 12 heat and force is applied thereto by a heated platen (not shown) such that the adhesive 17

on the film 18 is caused to be soften or melted and forced between the

lead frame 14 and around the wires 16. The force applied to the film 18

by the platen has to be sufficient not only to force the soften adhesive 17

between the lead frame members 14 but also sufficient to flatten the

wires 16 against the respective pads and respective leads to the which

they are connected." (Column 3, line 68 to column 4, line 9, emphasis

added).

Fig. 5, which is referenced by the Office Action for its use of "insulating material 56" as being an encapsulant as claimed, is simply directed to another embodiment where all of the lead frame conductors are brought to one side of the chip 52. The

insulating material 56 is not an encapsulant. In this case, the wires 54 that cross over some of the lead frame conductors (e.g. 51a) will be pressed down during the placement of the top film 17 as shown in Figs. 2, 3 and 4. Since those wires 54, once pressed down by the top layer, will necessarily short with the lead frame conductor 51a, the inventors disclosed the use of adding an insulating material 56 in between the two, i.e. above the lead frame conductor 51a and below the wires 54. This insulating material 56, has nothing to do with Applicants' claimed encapsulant, the former being added during the processing steps and the latter being removed during the processing steps.

As noted above, Conru et al. has no bearing whatsoever with respect to Applicants' claimed invention. The Office Action, however, rejects Applicants' Claim 1 as unpatentably obvious over Conru et al. in view of Dlugokecki. Since Conru et al. is so far removed from Applicants' claimed invention, it is difficult for the Applicants to see how a person of ordinary skill would be inspired to modify it on the basis of any other reference to arrive at Applicants' claimed invention. Even assuming one arguably found some basis for combining Conru et al. with Dlugokecki, the Dlugokecki reference, like the Conru et al. reference has no relationship to the Applicants' claimed invention. In fact, Dlugokecki relates to completely removing an existing die from a package and then replacing it with a new bare die. In other words, Dlugokecki is trying to throw away the silicone and keep the package whereas the Applicants are trying to throw away the package and keep the silicone.

Applicants note that the Office Action refers to Fig. 7 and to column 10, line 58-63 of Dlugokecki. The latter reference is to step 'a' of Dlugokecki's Claim 17. A close review of Claim 17, however, reveals that the Dlugokecki inventor was referring to "wire

bond pads" on the fingers of the lead frame and not to integrated circuit I/O pads on the active surface of a microcircuit. This makes sense, of course, since Dlugokecki is directed to completely removing the microcircuit by sandblasting it into dust. In view of the above comments, Applicants respectfully submit that Claim 1 is fully in condition for allowance over Conru et al. and Dlugokecki. If the Examiner still has reservations, the undersigned attorney would appreciate a short telephone conference with respect to the subject matter of this amendment.

In either event, Applicants respectfully requests that the amendments be entered pursuant to 37 CFR 1.116 in order to present the rejected claims in better form for reconsideration on appeal.

The Examiner is invited to telephone the undersigned attorney if a telephone conference would further this case in any way.

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On July 18, 2003

by Angela Williams

Signature

ACW
July 18, 2003

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APPENDIX

1. (Twice Amended) A method of making a stackable microcircuit layer comprising the steps of:

providing a plastic encapsulated microcircuit (PEM), the PEM including

(a) a microcircuit having an active surface containing integrated circuitry

and an integrated circuit I/O bond pad, and

(b) an encapsulant in contact with and encasing the microcircuit; and

removing at least part of the encapsulant to produce a modified PEM having a modified surface on which ~~modified surface~~ is exposed a conductive member that is electrically connected to the integrated circuit I/O bond pad.

2. The method of Claim 1 further comprising the step of forming an electrical lead on the modified surface of the modified PEM that leads from the conductive member to an edge of the modified PEM.

3. The method of Claim 1 wherein the microcircuit is a pre-tested microcircuit.

4. (Withdrawn).

5. (Previously Amended) The method of Claim 2 wherein the removing step is accomplished through grinding.

6. The method of Claim 2 comprising the further step of covering the electrical lead with an insulating layer.

7. (Withdrawn).

8. (Withdrawn).

9. (Withdrawn).

10. (Withdrawn).

11. The method of Claim 1 wherein the conductive member that electrically connects to the bond pad is part of a wire bond.

12. The method of Claim 11 wherein the conductive member is a gold ball bond.

13. (Withdrawn).

14. (Withdrawn).

15. (Withdrawn).

16. (Withdrawn).

17. (Withdrawn).

18. (Withdrawn).

19. (Withdrawn). 

20. (Amended) The method of Claim 47 wherein the PEM comprises a thin small outline package (TSOP) containing a gold ball bond, a lead frame, and a wire that are collectively encapsulated in the plastic body of the PEM, wherein the gold ball bond is formed on the bond pad, wherein the wire connects the gold ball bond to the lead frame, and wherein the gold ball bond is the conductive member exposed on the modified surface of the modified PEM through thinning.

21. The method of Claim 20 wherein the thinning removes the lead frame and the wire along with a portion of the plastic body.

22. (Withdrawn).

23. (Withdrawn).

24. (Withdrawn).

25. (Withdrawn).

26. (Withdrawn).

27. (Withdrawn).

28. (Withdrawn).

28. (Withdrawn).

29. (Withdrawn). B }

30. (Withdrawn).

31. (Withdrawn).

32. (Withdrawn).

33. (Withdrawn).

34. (Withdrawn).

35. (Withdrawn).

36. (Withdrawn).

37. (Withdrawn).

38. (Withdrawn).

39. (Withdrawn).

40. (Withdrawn).

41. (Withdrawn).

42. (Withdrawn).

43. (Withdrawn).

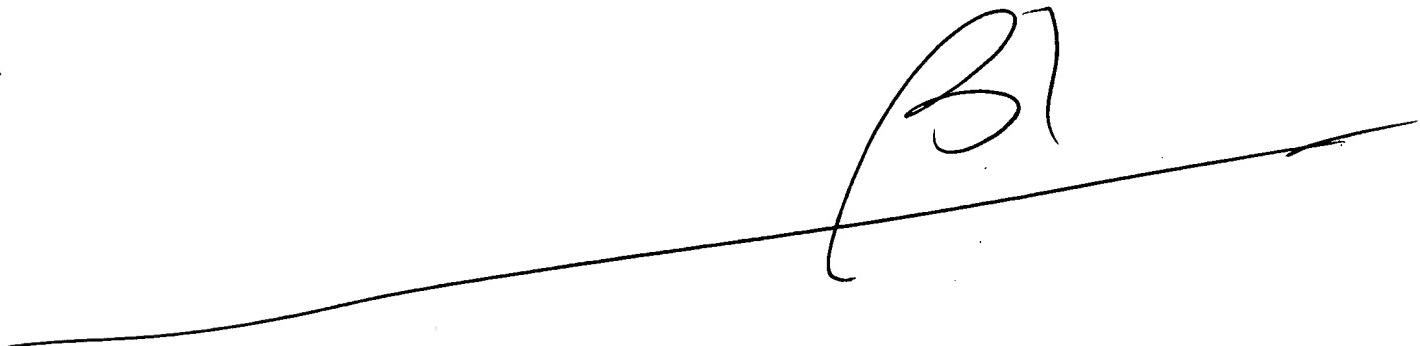
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44. (Withdrawn).

45. (Withdrawn).

46. The method of Claim 1 wherein the PEM's encapsulant is a plastic body.

47. The method of Claim 46 wherein the conductive member that is electrically connected to the bond pad is encapsulated in the plastic body of the PEM and wherein the removing step comprises thinning a first side of the PEM to expose the conductive member.

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